



# **Thermal Tech & Temp**

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Main Office: 1.219.213.2093

## **1.800.674.9284**

***6-Way Lowboy Console***

**With Master/Save Controllers**

## **Standard Features Are:**

All Powder Coated Steel Panels

Tubular 1.5" Frame Fully welded

73FC Transformer

125 Amp 3 Phase Circuit Breaker

3-Phase Input Tapping options of 480/575v, 3ph, 60hz.

Secondary Output Voltage 80 Volt

6 Channel Contactorized Switching

Albright 250 Amp Contactors

Individual Neon Indicators per Channel

EHS Master/Slave Temperature Controllers

Size: 36" high x 34" deep x 24" wide

6" Heavy Duty Casters

4 Eye Hooks

## **Read Carefully before operating**

- 1) Upon receipt of your new Power Console visually inspect it for any damage that might have occurred during shipment. If there are any signs of damage please call EHS Immediately so a damage claim can be processed.
- 2) The Power Console Weighs 960 pounds. Be very careful when loading and unloading using a fork-lift.
- 3) Never operate the Power Console with the sides or the top removed. Serious electrical shock can occur if care is not taken.
- 4) Always use a Primary Cable of #4 AWG minimum. Do not use anything smaller in size. The cable must be 4-Wire and the Power Console must be grounded at all times during use.
- 5) Make sure the Primary Input Tapings have been placed on the correct locations for the voltage you will be using i.e. 480/575 Voltage.
- 6) Make sure the Secondary Tapings have been placed on the correct locations for the heaters you will be using i.e. 80 Voltage.
- 7) Supply the console with a 125 Amp Fused Disconnect or Circuit Breaker to avoid any issues when under full load.
- 8) Always lift the Power Console with either a forklift from the bottom OR use a four point strap or chain to lift it from the top with the eye hooks.
- 9) If you see the Power Console about to fall off the Forklift do not try to stop it you could get seriously hurt.
- 10) If one of the wheels gets broken replace immediately.
- 11) If you should have any questions please call us 24 hours a day 7 days a week at our office # (609) 588-0900

## **Getting Started set up Procedure**


- 1) Make sure that all primary power connections are properly and tightly connected, if the connections are loose or mis-wired it will cause the terminals to heat up and either trip the breaker or damage the equipment.
- 2) Make sure that the unit is grounded and that the supply power is connected to the correct input the Primary tapings. Always be sure you have a good ground and it is hooked to the Plant Ground.
- 3) Connect the Triple Cable Sets to the output camlocks, and see that the corresponding thermocouples are plugged into the proper T.C. jacks. i.e. 1, 2, 3, Etc.. NEVER twist thermocouples and place them under a heater always use a Thermocouple Attachment Unit to connect the thermocouples to be sure of an accurate reading.
- 4) Always be sure to have the power off to the Controllers when hooking up the Triple Cable Sets as to not cause an ARC when connecting the Male Camlock from the Cable to the Female Panel Mounted Camlock on the Console.
- 5) Be sure and have all of the specifications for the Job prior to starting the Heat Treating process.
- 6) Thermocouple attachment!


**NOTE !! When attaching the thermal-couples to the workpiece or reattaching a broken thermal-couple, it is very important to temporarily disconnect the T.C. from the Jack on the Console and the Jack on the Recorder. The electrical spark of the TAU may travel through the T.C. wire and cause damage to the recorder or the controller.**



- 7) There are female T/C jacks on the rear of the console to allow you to loop from the Console up to a Recorder of your choice to collect data on the process.

# OPERATING INSTRUCTIONS for the EUROTHERM 3216 MASTER / SLAVE CONTROLLER

There are four keys on the face of the 3216 Controller.

The “” key returns the operator to the **HOME** display.

The “” key is used to select new parameters.




The  key and the  key increase or decrease a value.

There are **four modes of operation** that can be used with the 3216 controller.

1. **Fully Automatic:** The **Master** controller runs a set program to its own zone and to any **Slave** controller that is set to **Remote**.
2. **Ramp to Set-Point:** The controller **ramps** to a set-point at a set **rate**. The controller is set to **Local, Auto**, with the **Ramp “ON”**.
3. **Straight to Set-Point:** The controller goes straight to the set point as quickly as possible when set to **Local, Auto**, with the **Ramp “OFF”**.
4. **Percentage Timer:** The controller turns on and off according to a set percentage when set to **Local, Manual**, with the **Ramp “OFF”**.

The following page displays a typical Stress program using the **Master** controller in the **Fully Auto** mode. Each **STEP** allows the operator to choose from one of three options or **STYP – Step Types**.


- a. **StPt (set point) - RAMP (Ramp rate)**
- b. **SOAK (Time-Hours) (Time-Minutes)**
- c. **END (End of Program)**




The “” key moves from one option to another and the  and  keys are used to insert numbers for set point, ramp rate, or soak time values.


*Scrolling messages* appear on the bottom of the controller to give various status, set-up, or alarm information. For example; INPUT SENSOR BROKEN says that the Thermo-Couple is either broken or not plugged in.


## Setting up a Program




On powering up the 3216 Controllers the operator will see **S.br** and a scrolling message indicating an open T.C. **Off**




1. Press the advance key  to see **rmt** and a scrolling message **L-R** “*remote setpoint select*” This indicates that the controller is in the Remote mode.


2. Press the advance key  to see **10** and a scrolling message **WIND** “*HOLD WINDOW*”. This indicates that the current HOLD value is set to 10 degrees. At this setting the program will go into a HOLD state when the setpoint gets to 10 degrees over the input value. This number may be changed anytime within the program by using the   arrow keys.


3. Press the advance key  to see **1** and a scrolling message **STEP** “*current program step*” The controller is ready to accept an option for step 1.




4. Press the advance key  to see **StPt** and a scrolling message **STYP** “*STEP TYPE*” This is asking the operator to choose one of the following step options... **END (End of Program)** Choose StPt.  
**StPt (set point)**  
**SOAK**

5. Press the advance key  to see **500** and a scrolling message **SP** “*END SETPOINT*” This is asking the operator to choose a setpoint. This number may be changed by using the   arrow keys.


6. Press the advance key  to see **600** and a scrolling message **RATE** “*RAMP RATE*” This is asking the operator to choose a Ramp Rate. This number may be changed by using the   arrow keys.


7. Press the advance key  to see **2** and a scrolling message **STEP** “*current program step*” The controller is ready to accept an option for step 2.


8. Press the advance key  to see **StPt** and a scrolling message **STYP** “*STEP TYPE*” This is asking the operator to choose one of the following step options... **END (End of Program)** Choose StPt.  
**StPt (set point)**  
**SOAK**


9. Press the advance key  to see **1150** and a scrolling message **SP** “*END SETPOINT*” This is asking the operator to choose a setpoint. This number may be changed by using the   arrow keys


10. Press the advance key  to see **250** and a scrolling message  
“**RAMP RATE**” **RATE** This is asking the operator to choose  
a Ramp Rate. This number may be changed by using the   arrow keys.




11. Press the advance key  to see **3** and a scrolling message  
“**current program step**” **STEP** The controller is ready to accept an  
option for step 3.

12. Press the advance key  to see **SOAK** and a scrolling message  
“**STEP TYPE**” **STYP** This is asking the operator to choose  
one of the following step options... **END (End of Program)** Choose SOAK.  
**StPt (set point)**


13. Press the advance key  to see **1:30** and a scrolling message  
“**SOAK TIME**” **SOAK** This is asking the operator to choose  
an amount of time, in hours and minutes, for the program to stay at SOAK temperature.


14. Press the advance key  to see **4** and a scrolling message  
“**current program step**” **STEP** The controller is ready to accept an  
option for step 4.

15. Press the advance key  to see **StPt** and a scrolling message  
“**STEP TYPE**” **STYP** This is asking the operator to choose  
one of the following step options... **END (End of Program)** Choose StPt.  
**StPt (set point)**


16. Press the advance key  to see **500** and a scrolling message  
“**END SETPOINT**” **SP** This is asking the operator to choose  
a setpoint. This number may be changed by using the   arrow keys.


17. Press the advance key  to see **200** and a scrolling message  
“**RAMP RATE**” **RATE** This is asking the operator to choose  
a Ramp Rate. This number may be changed by using the   arrow keys.


18. Press the advance key  to see **5** and a scrolling message  
“**current program step**” **STEP** The controller is ready to accept an  
option for step 5.

19. Press the advance key  to see **END** and a scrolling message  
“**STEP TYPE**” **STYP** This is asking the operator to choose  
one of the following step options... **END (End of Program)** Choose END.  
**StPt (set point)**  
**SOAK**




## STARTING A PROGRAM

Press the “” key to see **60** and a scrolling message “*START SETPOINT*”. This is asking the operator **ST.SP.** to choose a setpoint for the program to start at. The default is the ambient temperature of the T.C. input.


Press the “” key to see **1** and a scrolling message “*Current Program Step*”. This is asking the operator **STEP** to choose a Step for the program to start at.

Press the “” key to see **60** and a ramping setpoint below. This ramping setpoint should be seen on **61..** all the slave controllers that are set to Remote.

The program is now running. OP 2 is the controller calling for heat. OP 4 is the controller in HOLD.

Parameters may be changed while running a program by pressing the “” key to see **1** (current step) and using the   arrow keys to access “**PAUSE**” **STOP**













Change the required parameter value while the controller is in **PAUSE** and start the program running again by changing the **PAUSE** to **RESUME**.

**TO STOP THE PROGRAM** press the “” key to see **5** (current step) **STOP**



Press the “” key once more to see **500** **OFF** The program is now shut off.




## Ramp to Set-Point Mode

1. Press the advance key  to see **rmt** and a scrolling message **“remote setpoint select”**. This indicates that the controller is in the **Remote** mode.  
**L-R**
2. Press the  arrow key to change the **Remote** mode to **Local**. You will see **LoC**  
**L-R**
3. Press the advance key  to see **OFF** and a scrolling message **“Ramp Enable”**.  
**RP**
4. Press the  arrow key to change the **OFF** ramp to **ON**.  
**RP**
5. Press the advance key  to see **number value**. This is asking for a value to be chosen for the **Ramp Rate**.  
**RATE**
6. Press the  or  arrow keys to change the “number value “ to the desired **Ramp Rate**.
7. Press the advance key  to see **32** and a scrolling message **“TARGET SETPOINT “**. This is asking for a value to be chosen for the SET-POINT .  
**ESP**
8. Press the  or  arrow keys to change the “number value “ to the desired **set point**.
9. Press the advance key  to see **AUTO** and a scrolling message **“LOOP MODE AUTO MANUAL OFF”**.  
**A-M**
10. Press the advance key  to see **1** and a scrolling message **“ADDRESS”**.  
**ADDR**


The controller will now start ramping from the input temperature to the target set-point (ESP), at the chosen Ramp Rate. The upper section of the display will begin **flashing** between the input value and **“Rp”**. The lower section of the display will show the ramping set-point.


Values for the Set point or the ramp rate may be changed any time throughout the heating process. The Ramp may also be put into **“pause”** ( similar to **hold** in the **Remote Mode**) by pressing the advance key  to see **NO** and a scrolling message **“Ramp Pause”**. Use the  key to change the **PAUSE** NO to YES.

**PLEASE NOTE : You must change the Ramp mode to OFF before returning to the Remote Mode  
Straight to Set-Point Mode**


1. Press the advance key  to see 

rmt
L-R




 and a scrolling message “*remote setpoint select*” This indicates that the controller is in the **Remote** mode.
2. Press the  arrow key to change the **Remote** mode to **Local**. You will see 

LoC
L-R
3. Press the advance key  to see 


OFF
RP

 and a scrolling message “*Ramp Enable*”.
4. Press the advance key  to see 


32
ESP

 and a scrolling message “*TARGET SETPOINT*” This is asking for a value to be chosen for the SET-POINT .
5. Press the  or  arrow keys to change the “number value “ to the desired **set point**.
6. Press the advance key  to see 

AUTO
A-M


 and a scrolling message “*LOOP MODE AUTO MANUAL OFF*”.
7. Press the advance key  to see 

1
ADDR


 and a scrolling message “*ADDRESS*” .
8. Press the advance key  to return to the home page. The upper value indicates the input temperature, and the lower value indicates the set-point .


The Op 2 light will show on the controller indicating that the controller is calling for heat, and will stay ON continuously until the input temperature reaches the set-point temperature. In this mode there is no ramping control and care must be taken to avoid over-shooting of the set-point.

## Percentage Timer Mode


1. Press the advance key  to see 

rmt
L-R




 and a scrolling message “*remote setpoint select*”  
the **Remote** mode.
2. Press the  arrow key to change the **Remote** mode to **Local**. You will see 

LoC
L-R
3. Press the advance key  to see 



OFF
RP


 and a scrolling message “*Ramp Enable*”.
4. Press the advance key  to see 

32
ESP




 and a scrolling message “*TARGET SETPOINT*”  
This is asking for a value to be chosen for the SET-POINT .
5. Press the  or  arrow keys to change the “number value “ to the desired **set point**.
6. Press the advance key  to see 

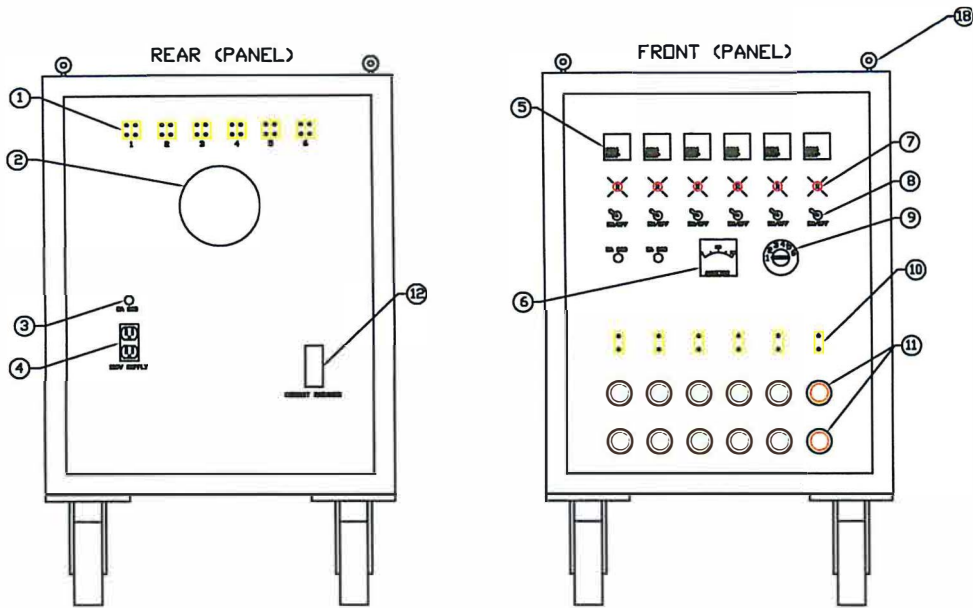
AUTO
A-M

 and a scrolling message “*LOOP MODE AUTO MANUAL OFF*”.
5. Press the  or  arrow keys to change the “**AUTO**“ to 

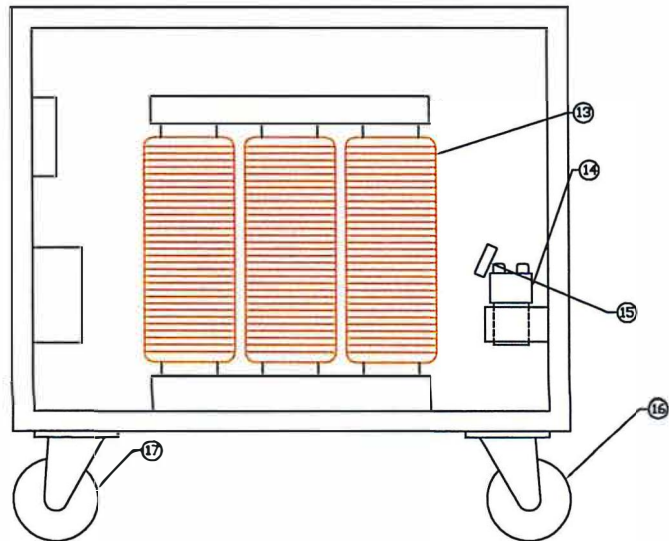
mAn
-----
6. Press the advance key  to see 

1
ADDR

 and a scrolling message “*ADDRESS*” .
7. Press the advance key  to return to the home page. The upper value indicates the input temperature, and the lower value indicates the percentage of operation. The percentage may be changed at any time using the  or  arrow keys.  
For example; if the controller is set to 50% it will cycle on and off approximately every two seconds. If the controller is set to 75% it will cycle on for approximately six seconds and off for about two seconds.



SIDE (INSIDE)

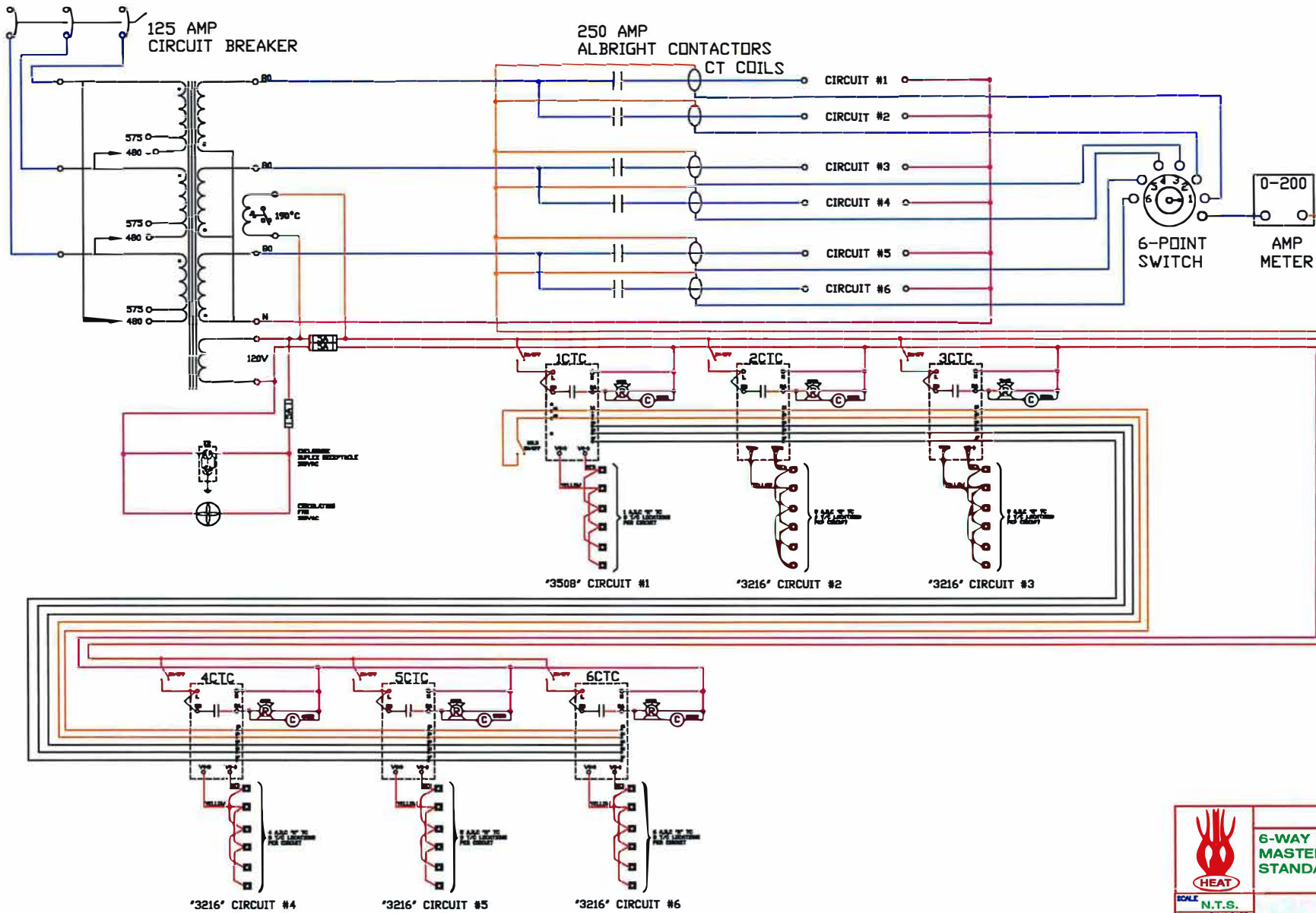


BILL OF MATERIALS			
#	QTY	P/N	DESCRIPTION
1	1	25249	REPLACEMENT T/C PANEL MOUNTED JACKS (DOUBLE)
2	1	21334	REPLACEMENT CONSOLE 6" FAN
2	1	21335	REPLACEMENT GUARD FOR 6" FAN
3	3	21413	SUPPLEMENTARY CIRCUIT BREAKER PANEL MOUNT
4	1	21258	120 VOLT RECEPTACLE GFCI (OUTLET ONLY)
4	1	21259	120 VOLT RECEPTACLE COVER GRAY
5	-	21427	EHS RAMP CONTROLLER MODEL "3216"
5	1	21429	EHS MASTER CONTROLLER MODEL "3216"
5	5	21430	EHS SLAVE CONTROLLER MODEL "3216"
6	1	21256	DIGITAL AMMETER 0-200 AMPS AC
7	6	21332	110 VOLT REPLACEMENT RED LAMP
8	6	21330	SPST ON/OFF TOGGLE SWITCH FOR CONSOLE
9	1	21342	SIX POSITION SELECTOR SWITCH
9	1	21344	REPLACEMENT KNOB FOR ROTARY SWITCH
10	6	21340	REPLACEMENT T/C PANEL MOUNTED JACKS (SINGLE)
11	12	24502	300 AMP FEMALE PANEL MOUNTS
12	1	21260	125 AMP CONSOLE BREAKER
12	1	21261	175 AMP CONSOLE BREAKER
12	1	21262	BREAKER SHUNT TRIP
13	1	CUSTOM	TRANSFORMER
14	6	21250	ALBRIGHT CONTACTORS SPST SW200, 250 AMP RATED
15	6	21337	CURRENT TRANSFORMER RATIO: 200:5AAC ID: 1.10"
16	2	21238S	REPLACEMENT SWIVEL 6" WHEEL
17	2	21238F	REPLACEMENT FIXED/RIGID WHEEL
18	4	21702	SHOULDER PATTERN EYE BOLT



6-WAY POWER CONSOLE  
FULLY AUTO CONTROLLERS  
STANDARD LOWBOY

REV.	DESCRIPTION	DR.	DATE



**6-WAY POWER CONSOLE  
MASTER/SLAVE CONTROLLERS  
STANDARD LOWBOY**

SCALE: **N.T.S.**

BY: **DAWK**

DRAWN: **DAWK**

DATE: **11/16/12**

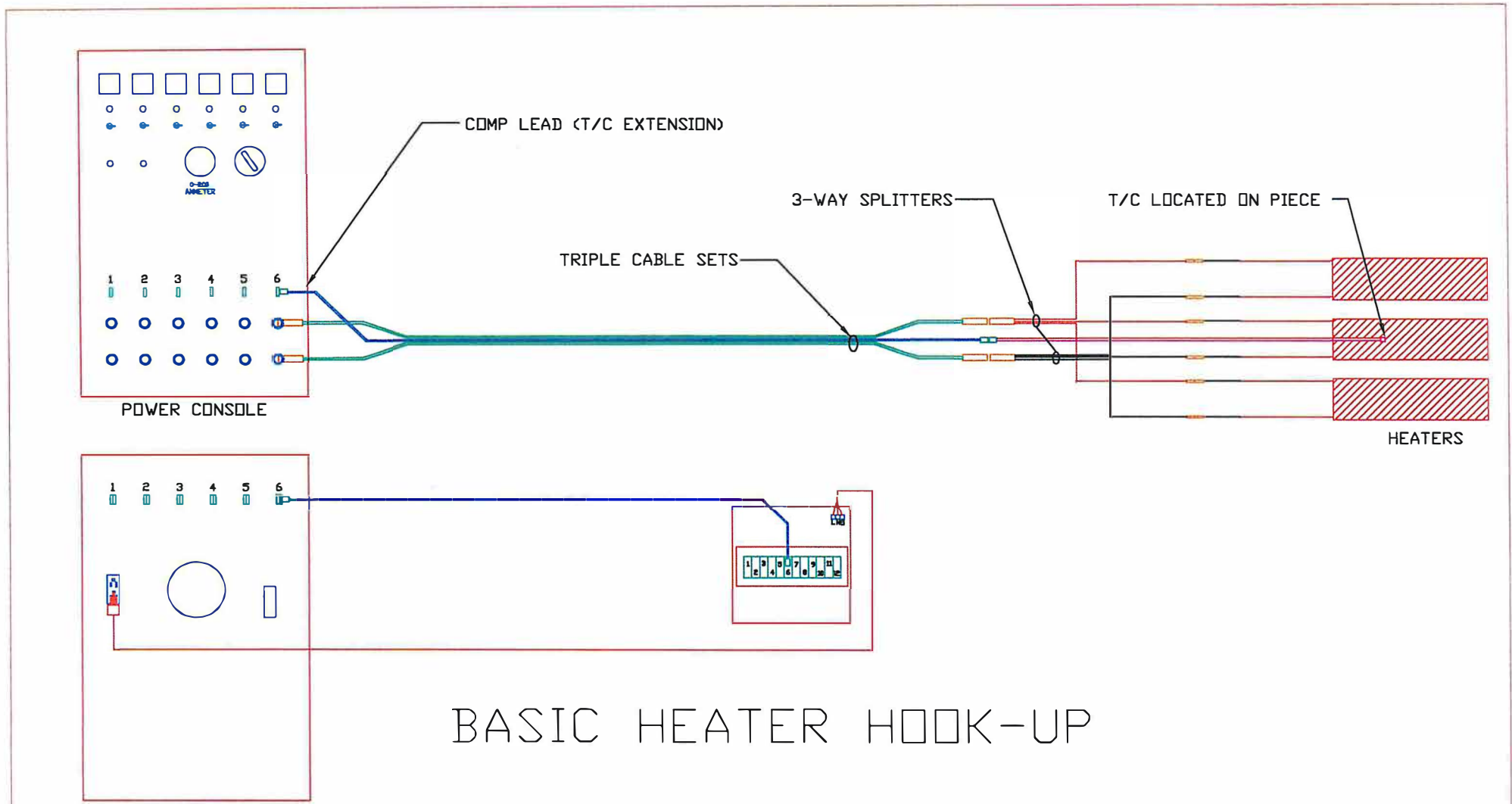
APP'D: **DAWK**

JOB NO: **1209-003A**

OIL TECH - SCHEMATIC


REV. DESCRIPTION DR. DATE

REV.	DESCRIPTION	DR.	DATE	



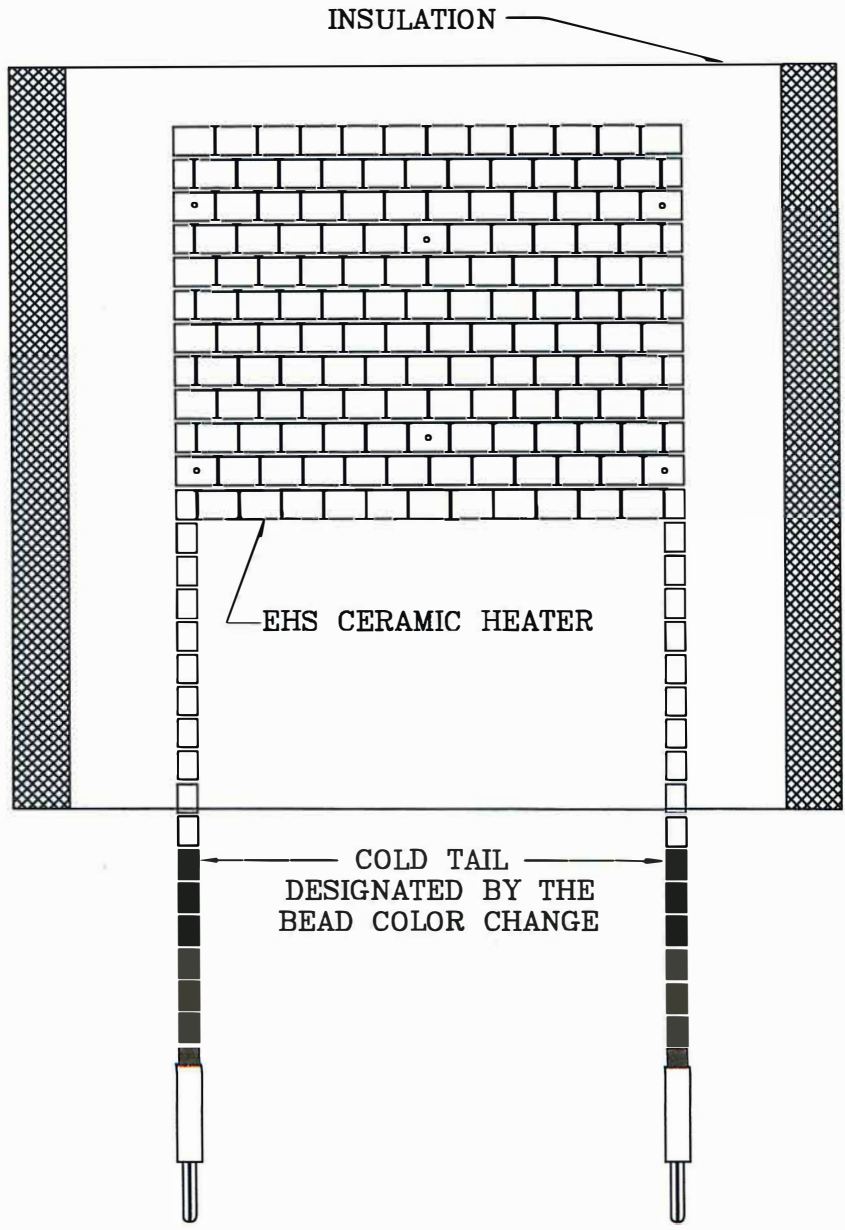
# BASIC HEATER HOOK-UP

ONE ZONE SHOWN ONLY  
OTHER FIVE TYPICAL

 <b>HEAT</b>	<b>RAMP 6-WAY WITH AMP METER</b>	
	<small>SCALE: NTS</small> <small>DESIGN: FT. MILK</small> <small>DATE: 11/19/87</small> <small>APP: [ ]</small> <small>REV: N/A</small>	
	<small>BASIC 6-WAY DIAGRAM FOR HEATER HOOK-UP</small>	
	<small>1 of 1</small> <small>D-6264</small>	

REV.	DESCRIPTION	DR.	DATE

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE.



# IMPORTANT NOTICE

TO INSURE A LONGER LIFE FOR YOUR CERAMIC PAD HEATER, DO NOT INSULATE PAST THE CHANGE IN COLOR ON THE TAIL BEADS OF THE HEATER.

THE TAILS OF THIS HEATER ARE CONSTRUCTED BY WELDING NICKEL WIRE TO THE HEATER WIRE ELEMENT TO ALLOW FOR A COLD TAIL. THE CHANGE IN COLOR INDICATES WHERE THE WELD IS AND EXCESS HEAT COULD CAUSE THE NICKEL TO BECOME BRITTLE AND THIS MAY SHORTEN ITS LIFE.

REV.	DESCRIPTION	DR.	DATE	TYPICAL	<table border="1"> <tr> <td>DATE</td> <td>BY</td> <td>CHKD.</td> <td>APP'D.</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	DATE	BY	CHKD.	APP'D.				
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